FAA AVIATION NEWS

NOVEMBER 1972

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COVER:
Mt. Washington, highest point in New England, is a breeder of violent air. See page 6.

FAA AVIATION NEWS

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A rusty hinge on a pitot tube cover caused loss of airspeed indicator, aborted takeoff.

Preflight in Haste... repair at leisure

There are occasions when two heads are definitely not better than one.

"Didn't you check it on preflight?"
"No. I thought you did."
"Likewise."

This little conversation might well serve as the epitaph on the tombstone of many an airplane. Splitting up the preflight inspection among several persons is a prominent exception to the maxim that two heads are better than one. Every individual has his own habitual routine method of inspection, and any interruption of that routine is likely to lead to the omission of some simple act, on the assumption that "George did it." The consequences can range from the comical to the tragic, as witness the following true story:

The couple had lingered longer than they realized in the warm coffee shop of the airport, talking flying in general and having a good laugh with friends over the silly blunders of pilots they knew who never could accept the idea that flying is a serious business. As they walked out of the building they realized that they would have to hustle if their in-laws in Aurora, expecting them at noon, were not to be kept waiting and perhaps given cause to worry. They considered delaying long enough to telephone, but that could get complicated, and probably would involve revising their flight plan, getting a new weather briefing, etc., so they decided to carry on as planned, hoping to pick up a little time en route with favoring winds.

To help matters along, they divided up preparation chores, the wife parking the car while the husband pushed the *Lark Commander* out of its hangar; wife readying the charts and other flight gear while husband stored their luggage aboard. They were certainly not about to scant the preflight inspection, but they agreed to save time by sharing the task. Both started at the tail and worked forward on either side. Husband, who worked swiftly and competently, finished his side first and met Wife at the leading edge of the port wing. Both gave a "thumbs up" sign of everything in order, and they climbed into the airplane. Wife, who needed flying time, took the lefthand seat.

They had the taxiway to themselves and following a careful run-up and look-around for traffic, they charged down the runway. After about 100 feet of roll the *Lark* was light on the mains, and Husband pointed his thumb skyward. Wife was about to ease the wheel back when her eyes, scanning the instruments, rivited on the airspeed indicator, which registered zero.

Husband: "Get it up! What's the matter?"

Wife: "We've got no airspeed. Look at it!"

Husband: "What?"

A quick look at the instrument, a glance at the remaining runway, and Husband chopped the throttle. He took the controls and told her to hit the brakes as soon as he dared. The runway was long enough but it was also sprinkled with dew, and just before coming to a halt the airplane skittered off the pavement. There was a sharp "clunk" up front, and the nose sank slowly below the horizon.

Wife: "I think we busted something."

Husband: "I don't think we're going to Aurora today."

As they waited for a tow from the maintenance hangar, Wife, in tears, wrung her hands over the damaged prop and nose gear. Husband moodily fingered the pitot tube cover designed to open automatically from wind pressure.

Husband: "Expletive!"

Wife: "What is it, dear?"

Husband: "The cover was stuck. That's why we weren't showing airspeed. A drop of oil—a measly drop of oil . . . Even spit would have worked."

Wife: "Oh, dear,"

Husband: "Didn't you check it on the preflight?"

Wife: "I thought you did."

Husband: "Likewise. It's on your side."

Wife: "I know, but you came around, and so I thought surely . . .

They took the bus to Aurora. ■

An airplane resting on its nose, instead of its nosegear, draws a lot of interest and comment.

VFR Terminal Radar Service

Around-the-clock radar service is now available to VFR pilots at many airports.

TWO ZERO XRAY, MAINTAIN 2,000 FEET AND TURN RIGHT TO 350 DEGREES.

"Right to 350 and we're climbing to 2,000. Two zero Xray."

TWO ZERO XRAY, TRAFFIC AT TEN O'CLOCK, FOUR MILES, SOUTHBOUND, AT 3,000 FEET.

"We have him. Two zero Xray."

TWO ZERO XRAY, TURN RIGHT HEADING ZERO NINE FIVE DEGREES, CLIMB TO AND MAINTAIN 3,000 FEET.

"Right to 095 and we're climbing to 3,000. Two zero Xray."

Typical IFR departure with radar vectors, right? Well . . . maybe, maybe not. The above transmission could also be an exchange between an FAA control tower and *a VFR aircraft*, utilizing Stage III VFR radar service being newly offered at many terminal areas in the United States. The service puts the VFR pilot on equal terms with the IFR pilot as regards radar assistance and surveillance, at specific terminals designated as Terminal Radar Service Areas (TRSAs).

Radar traffic advisories have been available to VFR pilots from control towers for more than a decade on an "as available" basis—meaning that traffic information was provided whenever the controller's time was not fully occupied with his primary function of separating IFR traffic. This basic service has been expanded gradually to include radar sequencing of VFR departures and arrivals (Stage II VFR radar service).

Within the past year the FAA Air Traffic Service has started providing Stage III of this service at some 20 additional terminal areas, where VFR pilots are offered virtually the same attention given to IFR departures and arrivals (in VFR weather, naturally). Within roughly a 25-mile radius of the airport, VFR aircraft are given radar vectoring, as well as sequencing and traffic information.

Furthermore, this service although optional for the pilot, is mandatory for the controller wherever it is offered. This means that the VFR pilot can count on radar assistance being there regardless of traffic density. The service may be used by any aircraft equipped with two-way radio: transponders are not required.

To see just how Stage III VFR radar service operates, we can follow a VFR pilot through on a flight from Lambert (St. Louis) Airport, to Omaha.

Availability of service. Our pilot begins by consulting the Airport/Facility Directory, Part 3 of the Airman's Information Manual, where he learns that Lambert, as well as Omaha, does offer Stage III (sometimes indicated as TRSA). AIM also contains a *chart* of the Terminal Radar Service Area, a circular chunk of airspace extending outward from the airport somewhat like an inverted cone. The distance from the perimeter of the area to the airport varies from 30 to 15 miles, and there are many other local differences in make-up. At St. Louis the radius is 20 miles.

The chart identifies airways, airports, prominent landmarks and terrain features, and a number of call-up points that help the radar controller identify a target on his scope. Our pilot also finds the local frequencies for Lambert Stage III, and notes that he is to check with the ATIS broadcast to verify the channels.

At present the St. Louis TRSA chart appears under "Changes to Part 4" section in part 3 of AIM; it will move eventually to the *Area Notices* of Part 4. (Material destined for Part 4, which is printed twice yearly,

VFR TERMINAL RADAR SERVICE TERMS

Terminal Radar Service Area (TRSA): A specified area surrounding an airport with radar-equipped FAA Control Tower where VFR radar service is offered. TRSA rules do not require the pilot to have a private license or better, although existing airport rules may do so at some locations. A two-way radio is mandatory. Use of the service is optional for the pilot.

Stage I provides landing information (wind, runway, etc.) when not obtained from ATIS, information on where to contact the tower, plus traffic information and vectoring on a workload-permitting basis.

Stage II provides all the above, plus sequencing for VFR planes.

Stage III provides all the above, plus sequencing, vectoring and separation for participating VFR planes and IFR flights.

Some control towers have separate frequencies for VFR and IFR service; otherwise one approach control position handles both types of operation. Modern automated electronic equipment expands ATC capacity.

usually appears first in Part 3, which is printed monthly.) In consulting either part, pilots should take care to distinguish Terminal Radar Service Areas (so-titled) from other charts otherwise entitled.

Special frequency. Our pilot notes that AIM lists two frequencies for the St. Louis VFR radar service, one for arrivals or departures in the north sector, and one for the south sector. He scribbles down the frequency for his flight, checks it against the ATIS broadcast. The latter concludes with the reminder that "departing pilots wishing radar service should contact Clearance Delivery", and our pilot does so.

Clearance Delivery. He tells Clearance Delivery that he is Cessna 3720 Xray, northbound for Omaha VFR; that he plans to fly en route at 4,500 feet. He is then given a frequency to contact after takeoff, for vectors that will provide him with radar separation from IFR traffic and all other VFR traffic using the service—he realizes, of course, that there are likely to be VFR airplanes in the area not utilizing the service, and he must not neglect the habit of continuous scan for other traffic.

End of service. As he nears the perimeter of the terminal radar service area, 20 miles away from the airport, he is informed that radar service is terminated. From this point he is strictly VFR on his own.

Since our pilot has filed a VFR flight plan for his flight to Omaha, he switches frequencies to the flight service station and activates his flight plan, as he continues climbing to his en route altitude, 4,500 feet. (VFR flight plans are not activated automatically on take off, as is the case with IFR flight plans.)

Approaching destination. He continues merrily on his way until he is about 25 miles out of Omaha, when he begins monitoring the Omaha ATIS for landing information, including which frequency to use for Omaha VFR radar service, and he makes his call-up:

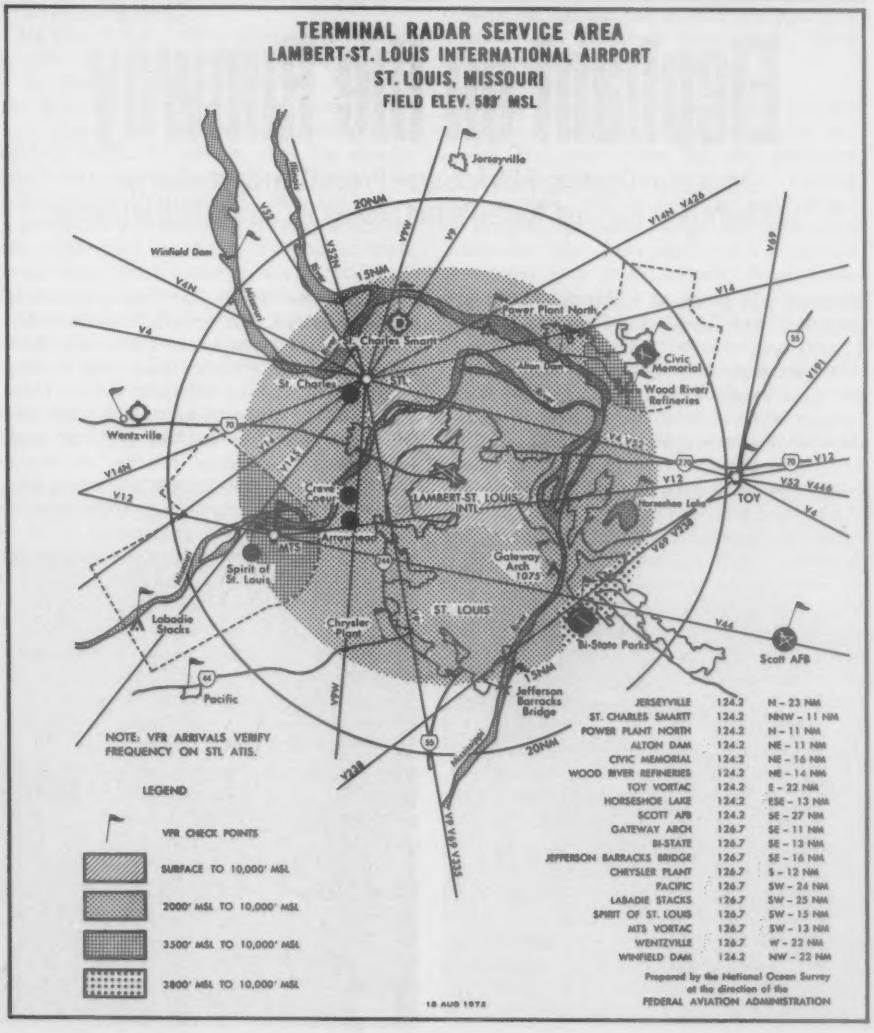
"Omaha approach control, Cessna 3720 Xray over the Omaha VOR at 4,500 with information Delta, requesting radar service."

Since our pilot is not transponder equipped, he is asked by Omaha radar to make some turns in order to help the controller identify his target on the radar scope. Once radar contact has been established, two zero Xray is given radar vectors to the airport, and altitude changes.

Aircraft separation. While on radar our pilot will normally be provided with a three mile lateral separation from IFR aircraft and other VFR participating aircraft, using the radar service. However, since Stage III is always conducted in weather as good as or better than basic VFR, some non-radar separation may be used, especially in really fine weather. This could consist of altitude separations of 500 feet, or a visual separation—our pilot might be asked to sight and follow at a safe distance another aircraft, either inbound or outbound. This type of separation is also used in terminal areas for IFR aircraft when the weather is good enough.

Stage III may have a formidable ring to its name—like Category III—but in fact it is a very simple and comfortable way to fly VFR at moderately busy terminals. The knowledge that one is being watched over is reassuring, even though pilots realize that the final responsibility for avoiding other aircraft and obstacles is theirs. Some pilots have groaned at the thought of learning new terminology, or of sacrificing some of their independence of action in the air, but most of those who have tried the new service regard it with enthusiasm as one of Air Traffic Control's best boons to general aviation.

Try it. You might like it. ■


TERMINAL RADAR SERVICE AREA
LAMBERT-ST. LOUIS INTERNATIONAL AIRPORT
ST. LOUIS, MISSOURI
FIELD ELEV. 589' MSL
Jerseyville
Winfield Dam
Power Plant North
Civic Memorial
Wood River Refineries
St. Charles
Wentzville
LAMBERT-ST. LOUIS INTL
TOY
Horseshoe Lake
Arrowhead
Spirit of St. Louis
Gateway Arch 1075'
ST. LOUIS
Chrysler Plant
Labadie Stacks
Bi-State Parks
Scott AFB
Pacific
Jefferson Barracks Bridge
20NM
15NM
NOTE: VFR ARRIVALS VERIFY FREQUENCY ON STL ATIS.
LEGEND
VFR CHECK POINTS
SURFACE TO 10,000' MSL
2000' MSL TO 10,000' MSL
3500' MSL TO 10,000' MSL
3800' MSL TO 10,000' MSL
JERSEYVILLE 124.2 N – 23 NM
ST. CHARLES SMARTT 124.2 NNW – 11 NM
POWER PLANT NORTH 124.2 N – 11 NM
ALTON DAM 124.2 NE – 11 NM
CIVIC MEMORIAL 124.2 NE – 16 NM
WOOD RIVER REFINERIES 124.2 NE – 14 NM
TOY VORTAC 124.2 E – 22 NM
HORSESHOE LAKE 124.2 ESE – 13 NM
SCOTT AFB 124.2 SE – 27 NM
GATEWAY ARCH 126.7 SE – 11 NM
BI-STATE 126.7 SE – 13 NM
JEFFERSON BARRACKS BRIDGE 126.7 SE – 16 NM
CHRYSLER PLANT 126.7 S – 12 NM
PACIFIC 126.7 SW – 24 NM
LABADIE STACKS 126.7 SW – 25 NM
SPIRIT OF ST. LOUIS 126.7 SW – 15 NM
MTS VORTAC 126.7 SW – 13 NM
WENTZVILLE 126.7 W – 22 NM
WINFIELD DAM 124.2 NW – 22 NM
Prepared by the National Ocean Survey at the direction of the FEDERAL AVIATION ADMINISTRATION
18 AUG 1972

LOCATIONS OF STAGE III VFR TERMINAL RADAR SERVICE

Eastern Region:
Albany, N.Y.
Baltimore, Md.
Pittsburgh, Pa.
Richmond, Va.
Rochester, N.Y.

Central Region:
Omaha, Neb.
St. Louis, Mo.
Wichita, Kan.

Great Lakes Region:
Akron-Canton, O.
Cleveland, O.
Detroit, Mich.

Pacific Region:
Guam

Rocky Mountain Region:
Denver, Colo.

Southern Region:
Greensboro, N.C.
Jacksonville, Fla.
Macon, Ga.
Montgomery, Ala.
Nashville, Tenn.
Savannah, Ga.

Southwest Region:
Albuquerque, N. Mex.
Houston, Tex.
New Orleans, La.
Tulsa, Ok.

Western Region:
El Toro, Cal.

See Airman's Information Manual (Parts 3 and 4) for charts, procedures and frequencies to be used at specific locations.

Elephant on the Runway

Demetrios Copadis, FAA Accident Prevention Specialist for northern New England, has an artful answer for all aviation problems.

New England's mountains have been celebrated in song and story since the nation began, and with good reason. The higher peaks are an awe-inspiring sight, whether approached on foot, by road, or by air. But these peaks are also attended by some of the most potent forces of Nature, and they have been taking a grim toll of aerial visitors in the past few years.

At 6,288 feet, Mt. Washington in central New Hampshire is the highest point in New England. It is also the site of the *highest wind velocity ever recorded:* 231 mph. The vertical flow of air near the summit commonly exceeds 1,000 feet per minute. Attempting to overfly a downdraft of that magnitude in a light plane, even in a light twin, is simply asking for trouble. No one in New England knows this better than Demetrios Copadis, Accident Prevention Specialist for the Portland GADO, which serves Vermont, northern New Hampshire and Maine.

A husky sportsman who has been flying for 33 of his 49 years, Demy is not a timid pilot; aviation has been his whole life. He first soloed at age 16, and he flew in B-24s in WW II. After several postwar years as a flight instructor he became manager of flight operations for East Coast Aviation in Massachusetts. He joined FAA as an inspector in 1964.

Demy flies his own open-seater antique *Fleet* for recreation on weekends, partly as a compensation for the fact that his present job as Accident Prevention Specialist keeps him on the road or behind a desk most of his long working hours. The majority of his days are spent behind the wheel of a big station wagon jam-packed with aviation safety education materials and displays, used in the many pilot meetings he organizes in his tri-state territory.

Current in most light general aviation aircraft, Demy knows their limitations as well as he knows his own zip code, and he constantly reminds other pilots—"Don't ask the airplane to do what it wasn't built to do." He enjoys mountain flying and he knows the White Mountains of his native New Hampshire as well as any man, but he will never take chances with them. He does not consider mountain flying dangerous, but he has seen too many pilots brought down from the heights on a stretcher—he knows it can be fatal to the careless.

Typical of the preventable type of accident that Demy Copadis is concerned about was the crash of a twin *Aztec* on March 21, 1971. The pilot, a 53 year old dentist, and his wife set out early in the morning on a flight from Norwood, Mass. (near Boston) to Quebec City, Canada. The weather forecast for northern New England contained "flight precautions for low ceilings, [low] visibilities, and icing in snow showers . . . developing turbulence in all sections." The ceiling for virtually all of New England was given as 1,500 to 2,500 feet overcast, with cloud tops from 8,000 to 12,000 feet.

Nevertheless the pilot, who was not instrument rated, took off for Quebec City without filing a flight plan. There is no indication that he sought or received a weather briefing from the local flight service station.

Midway along his route lay Mount Washington, its 6,288 foot peak hidden by clouds and snow showers. Less than an hour after departure the *Aztec* slammed into the eastern slope of the mountain at the 5,000 foot level, killing both occupants. Whether the pilot strayed from his intended flight path, or whether he was pulled down by the force of a vicious downdraft peculiar to that eastern slope, will probably never be known.

In Demy Copadis' book, the vicinity of Mt. Washington is one area devoutly to be avoided in periods of turbulent air. Even for seasoned pilots like himself, trained to sense and anticipate changes in the vertical movement of air, a careful reading of weather reports is a must before flying in the direction of a major peak.

Weather also played a grim part in the holiday flight of a four person evangelical team bound for Canada from Maine in September of 1971. The pilot, a 46-year-old minister from South Carolina, planned to fly from Belfast, Me. (about 50 miles south of Bangor) to Montreal, in a Mooney Mark 20. Again, no flight plan was filed, but the pilot did check the weather service twice during the day. His second briefing at 2:46 p.m. recommended that the flight be cancelled because of poor weather en route. The ceiling was estimated as 1,000 feet broken, 1,700 feet overcast, with rain in the area obscuring the mountains.

Nevertheless the Mooney took off at 4:00 p.m. Neither the pilot nor any of his three passengers were seen again until more than six months later, when the melting snows on Spruce Mountain, near Bethel, Me., revealed the wreckage of their plane. What possessed this pilot to take off, in spite of his warning, and the reported locally "drizzly ceiling of 300 feet", is the kind of enigma that keeps Accident Prevention Specialists like Demetrios Copadis up at nights (planning and conducting safety clinics).

Not all mountain accidents take place in bad weather. Aerial sightseeing in the White Mountains of New Hampshire, the Green Mountains of Vermont, and the many scattered peaks of Maine is becoming a favorite pastime for tourists—and for private pilots. This is a kind of flying Demy Copadis

loves to do, but even on the more gentle lower mountain slopes he is careful always to hold sufficient altitude to protect himself from sudden downdrafts, especially in low-powered aircraft. This is a precaution not always observed by other pilots, frequently with sad consequences.

On a fine October day in 1971, when the autumn foliage was in fine display, a young pilot with a commercial rating and considerable military flying experience was getting some landing practice in a Cessna 150 at the Concord (N.H.) Airport. He apparently wandered away from the pattern on a sightseeing jaunt, in the direction of the thickly wooded western foothills. Despite a subsequent Civil Air Patrol search for the missing airplane, it was not found until *May of this year.*

One of the hardest tasks Demy Copadis has is acquainting pilots with their own limitations. This is especially difficult with experienced, fairly affluent pilots who have their own airplanes—in many cases high-performance aircraft. Such pilots are just not likely to pay attention to anything told them by a young instructor with a few hundred hours of flying time.

He knows that if these pilots were renting aircraft, they would be checked occasionally by fixed base operators, and incipient bad flying habits might be eradicated at an early stage. But the pilot who owns his aircraft tends to believe that he simply gets better the longer he flies. This is true in general, but it is also true that any errors in procedure or technique he may unknowingly slide into are likely to become fixed habits that could cause a serious accident some day, in critical circumstances.

Demy has observed, for example, that some pilot-owners are rather sloppy at the controls when asked to fly at minimum controllable airspeeds. They may have earned their ticket at an earlier date before FAA began to place emphasis on this technique as an important evidence of aircraft control, and never bothered to practice it. Then, some fine day, when they are sightseeing or attempting to provide an aerial platform for photography near a mountain crag they suddenly lose more altitude than they can spare.

Demy, who has studied law and has the persuasive tongue of an orator, along with a perceptive knowledge of human beings, likes to challenge pilots in a subtle way to demonstrate their assumed ability at such arts as slow-flying. If the discussion culminates in an actual flight, Demy makes certain that the demonstration is carried out at a safe altitude. More than one high-time pilot has discovered, thanks to Demy's gentle probing, that he has no real acquaintanceship with the minimum control airspeed of his airplane, with what Demy calls "the feather edge of control." Some find they are unable to avoid losing altitude whenever the airspeed at cruise drops to within 15-20 percent of stall. On occasions of this kind, Demy is careful never to adopt the "I told you so" attitude, but simply discusses in a quiet tone the difference between relying on excess power and on precision control—the difference that many flyers are unaware of.

Sloppy go-around techniques are another of Demy's favorite subjects. He has observed that some pilots fall into the habit of retracting flaps, and perhaps landing gear as well, before restoring full power. If possible he likes to go up with such pilots and have them carry out a simulated go-around at a given altitude. When these pilots find themselves dropping 10, 20, even 100 feet below the "runway" before beginning to climb, they get the point.

Demy finds that some owners of light twins are not aware that their aircraft are incapable of low-altitude engine-out go-arounds. The lightest twins (under 6,000 lbs) in fact are not *required* by certificate to maintain altitude with one engine. With pilots who find this difficult to believe, Demy can be explicit to the point of bluntness.

"If you are on late final with this bird," he once told a pilot, "and you lose an engine, land—period. If there is an elephant on the runway, all right, too bad, there will be a lot of cheap elephant meat in the market tomorrow, but *land*—period. It isn't smart to try a go-around with one engine."

Precision control is a skill that can spell the difference between safe flying and accidents, when it comes to maneuvering in and out of the many small landing fields in the wooded and mountainous vacation country of New England. As an Accident Prevention Specialist, Demy knows that at some of these airstrips a slight miscalculation, an abrupt shift of wind, or a slight imbalance in the weight distribution of the aircraft can bring a tearful end to someone's vacation plans—unless the pilot is capable of handling the aircraft effectively when the airspeed is down.

Demy notes that most of the accidents in mountain flying in New England occur to pilots visiting from other states, who have little experience with shifting vertical currents of air. He recommends, in the interest of safety, that newcomers spend an hour or two flying with a local seasoned pilot to get the feel of the up- and down-drafts in the mountains before they set out on their own. Excellent short courses on mountain flying are given at many adjacent airports.

Of course, if you really want to fly with a masterful teacher, you can always call on Demetrios Copadis. Wherever he travels through Maine, New Hampshire and Vermont he is always ready, practically at the drop of a hat, to exchange his accident prevention specialist's blazer for his flight jacket, and go flying with a pilot who has a desire to learn. Over 30 years of flying lore are rolled up in that jacket. ■

A good listener as well as a talker, Demy (in flying jacket) tries to understand the feelings of pilots and airport operators, as well as their problems. Wooded, hilly environs of White Mountain Airport is typical of rural New England.

That pounding noise you hear in your sleep may not be coming from air in the water pipes in the basement. Someone down there may be building his own aircraft. There are an estimated 10,000 pilots busy pounding away at homebuilt aircraft in their basements all across the nation, and that adds up to a lot of midnight oil and late hammering.

As a matter of fact, the basement is not the only construction site used: homebuilt airplane construction also goes on in garages, attics, playrooms or even living rooms. Indeed, one young woman is known to be building an aircraft in the living room of a rather small New York City apartment. Such obvious questions as "How are you going to get it out to an airport?" are brushed off as inconsequential. Anyone determined enough to build his own airplane is capable of getting it transported to a flying site.

The current fleet of FAA-certificated homebuilt aircraft in the United States numbers 3,571—which indicates that (1) more homebuilts are started than are ever completed, and (2) more time and effort is required than most people imagine. Building an aircraft from scratch is probably one of the most demanding tasks any human being can set out upon. The standard of workmanship must be uniformly high from start to finish, if the product is to be approved finally by FAA.

Why do they build them? The uninitiated might think that the main reason for building one's own plane is a financial one. You can buy a set of plans for anywhere from $25 to $150, and with about $2,000-$3,000 worth of supplies and equipment you could build a functioning airplane. A comparable sports model from a manufacturer might cost you anywhere from $10,000 to $15,000. So you have saved a lot of money, right?

Not really, because experienced private builders will tell you that it takes as much as four to five years to complete a plane when you work on it part time, and the average amateur builder will probably put in a total of around 3,000 hours working on it before he gets approval to fly it. Thus, in terms of hours spent on the job there's really not much financial saving at all. The most economical way to own your plane may still be the purchase of a second-hand aircraft.

No, amateur builders say, it is not the money: it is the challenge of actually constructing your own flying ship, the thrill of starting with a few plans and then working at it month after month until the plane begins to take shape. Finally you ride off into the sky and realize that you have got up there among the stars by your own efforts.

Homebuilders talk about the satisfactions of creativity and the ability to express your personality by fashioning something with your own hands in this age of technological mass production. And they care little about the years they have to expend on the construction of just one airplane because they find it to be a meaningful project which is both relaxing and fulfilling. In fact, many amateur builders have constructed two and even three planes over the years.

The hours flown in homebuilts are showing a healthy increase—from 70,237 hours in 1970 to 84,072 in 1971. The figure should easily top the 100,000 hour mark in the current year. In terms of actual usage, these figures are probably very conservative, since the computation of flying hours is generally made from the tachometer, which some privately built aircraft do not have.

Amateur Professionals

Amateur plane building attracts a wide variety of people from diverse backgrounds: doctors, lawyers, businessmen, commercial pilots, and the plain old Sunday pilot. They are a far different group from that first generation of amateur builders which sprang up after World War I. Most of those early amateur planes were built quickly and inexpertly by young people who had become intrigued with the exploits of the military pilots, and were dying to get into the air. Many of them found it a fatal experience. Incredibly unsuited materials were used, such as wooden staves, canvas, and motorbike engines—with predictable results. The safety reputation of flying suffered badly from the enthusiasm of those early home builders. Today's amateur builders of aircraft approach their work more carefully, follow detailed plans, employ standard aviation supplies; and the construction is checked along the way by an FAA inspector who must issue a certificate of airworthiness before the plane can be flown.

Many of today's homebuilders are professional pilots, including airline pilots of giant jets, who build at home for relaxation and fun. Many are engineers. Some are busy housewives and mothers. All are full of enthusiasm for this "sport."

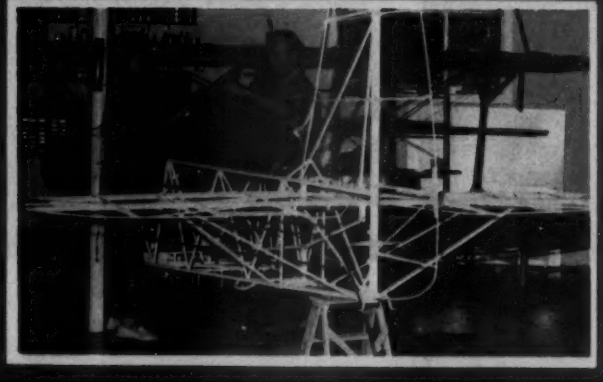
Is it difficult to build your own airplane? In a word, Yes. It is a far cry from a Tinker Toy or Erector Set project. It is a long, detailed process that takes time, patience, and at least a minimal understanding of aerodynamics, as well as some basic competence with tools. For example, it might well take you a "month of Sundays" just shaping plywood rib jigs for a tapered wing.

Anyone tempted to enter this field would be well advised to talk it over with someone who has had the experience. There is a national organization of amateur aircraft builders, the Experimental Aircraft Association, with about 385 local chapters throughout the country and others around the world. EAA members in your locality will be able to give you a realistic picture of what is in store for you, regarding any design you have in mind.

The EEA also has about 250 of what they call "designees" located regionally. These

Connie Marsh of Washington, D.C., puts the finishing touches

Airplane in



ing touches on the cowl of her hand-made Smith *Mini-plane*.

in the Attic

are capable persons appointed to assist amateur builders in their work. The designee forwards report to the national office in Hales Corner, Wisconsin, of each homebuilt airplane under construction, and he offers his advice and help to the builder. Incidentally, EAA examines National Transportation Safety Board reports on all accidents involving amateur-built aircraft, and keeps a watchful eye out for any suspected design flaws.

Some indication of the value of the work done by the Experimental Aircraft Association was shown at the EAA convention in August, 1972, when the Association's president, Paul Poberezny, was presented with the FAA Merit Award, the highest award made to civilians in aviation. Over 1,000 homebuilt, antique and classic airplanes were flown into the convention, at Oshkosh, Wis. EEA has 34,000 members.

The homebuilder has his choice of many commercially available plans, but his choice should be limited, if possible, to types of aircraft he already has some familiarity with. Lack of familiarity in type is a chronic cause of accidents in homebuilts, as it is with other general aviation aircraft. You may be personally acquainted with every nut and bolt that went into your little *Pitts*, but if you have never flown one, you had better get your experience elsewhere before you take up your pride and joy. If a mishap on takeoff sends you back to the drawing board, you have a long, long way to go.

Another important factor governing your choice of model is the availability in your area of the required materials. Especially on your first time around you want to avoid substituting for the specified items. If Sitka spruce is called for, do not try using poplar, or elm. Again, aircraft steel is especially alloyed for an adaptability to welding; the very slight amount of carbon often present in non-aircraft steel can cause the metal to become dangerously brittle after being subjected to heat. Another example: aircraft nails are usually cement coated to give them resistance against rust and against working out under the influence of vibration, whereas common nails are not.

Your local FAA General Aviation District Office or Engineering and Manufacturing District Office should be notified at the onset of your project, and an inspector must check your work before any section is closed up. It is a good idea to discuss any modifications of the plan you have in mind before you embark on them. You are entitled to vary the plan as you see fit, but you must be prepared to justify the changes with sound aerodynamic theory—not just wishful thinking.

When after many months or years of moonlight labor the great day dawns when the creation of your own hands is ready to be wound up and launched, do not be hasty about getting into the air. As with all commercially built new models, yours should be subjected to several hours of taxiing tests at gradually increasing speeds, so that the engine and controls can be checked in detail. Then the FAA inspector can be called in for the flight approval.

This first approval allows you to fly your plane within the general environs of your home airport, perhaps within a radius of 25 miles. The aircraft must be checked again after 50 flying hours (75, if a non-certificated engine has been used). At this 50 hour, or 75 hour, inspection the FAA official will check over your plane again, study your log book, and discuss the aircraft's performance with you. When you receive this second approval you will then be able to fly most anywhere in the continental United States, and you may carry passengers, but not for hire. From that time on, the only inspection you will need is the annual inspection required of all aircraft.

And you've done it—built and flown your own plane.

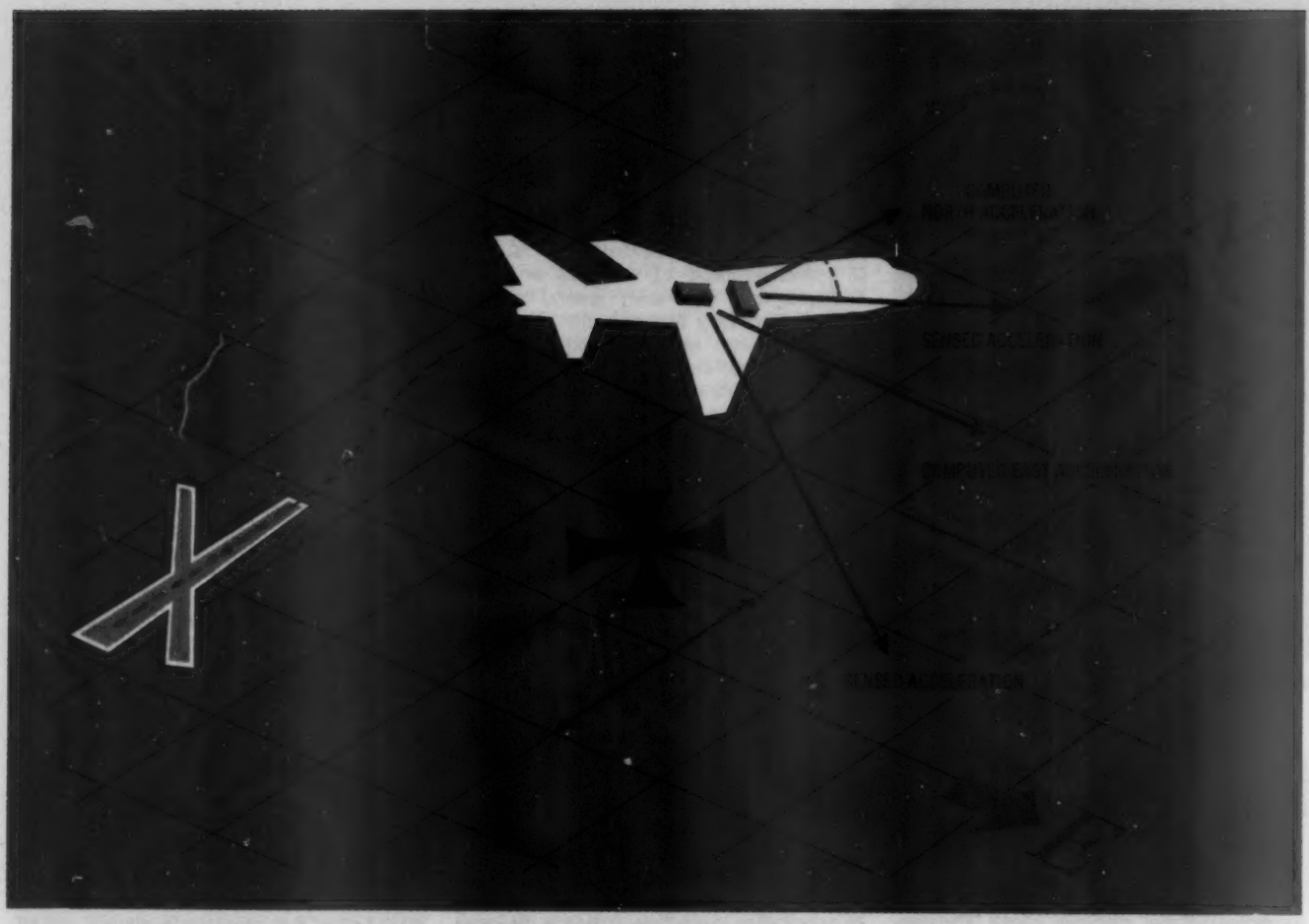
How Safe is it?

But is it safe? The NTSB figures on amateur built aircraft, for 1970 show 13 pilot fatalities in homebuilt planes in a total of 85 accidents. This is equivalent to one pilot fatality for every 270 aircraft, which is comparable to the figures for all general aviation (about one pilot fatality for each 230 aircraft). In fact, the Washington representative of EAA, David Scott, is convinced that the amateur-built planes have a safety record equal to manufactured planes, and that most accidents are caused by that same old problem: pilot error.

There are some differences in the handling of amateur-built planes, though. They are generally small planes, the wing loading is high, and thus they do not have the stability of larger planes. Getting used to an inherently unstable aircraft takes practice. On the other hand, since they are usually flown near their home airport, homebuilts seem to be involved in fewer weather problems than other planes.

All in all, the homebuilt aircraft seems to be just about as safe an airplane at its builder is a patient craftsman and careful pilot. There is probably no better way to get to know an airplane inside and out than to build it from raw materials and a set of plans. Many homebuilders, after completing one or two aircraft from set plans, like to develop their own designs, spurred on with the intention of competing in air races. Very possibly some of these experiments will lead to new safety designs for commercially-built small airplanes.

Whether they do or not, it is a certainty that while most of us are pursuing our adventures in slumber, the more adventuresome among us are going to keep on working away at odd hours of the night, in basement, attic and garage, fabricating an implausible dream. ■



Inertial Navigation

How airplanes fly without reference to the ground.

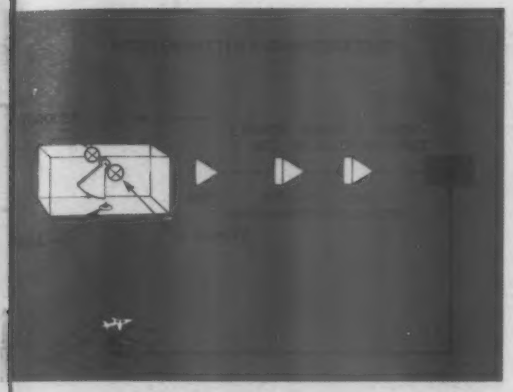
Inertial navigation systems, originally designed for directing guided missiles to their targets, are now the primary navigation system among many of the world's major airlines flying transoceanic routes. Although designed principally for overwater flight, INS is also used in foreign areas where ground-based NAVAIDS are scarce, and some U.S. airlines are even using it in domestic operations as a complementary system to radio navigation. There is growing use of inertial navigators in general aviation aircraft, too, although such usage is confined to the larger business aircraft.

The major attraction of the inertial navigator is that it acquires its data without the need for any reference outside the airplane, such as radio aids, earth landmarks or celestial bodies. Unlike the Doppler radar, it is an entirely self-contained system. (Doppler radar requires input from a compass system with a plus or minus one degree accuracy.)

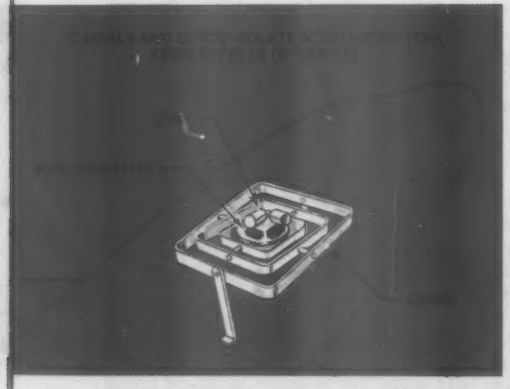
Doppler, which has been in airline use since the latter fifties, and inertial navigation share a number of common characteristics. Both are automatic dead-reckoning systems which utilize computers to translate velocity measurements into navigation data. Both types of systems continually keep track of airplane motion, forward and from side-to-side. This cumulative motion data is computer-translatable into a variety of navigational information—track, distance covered along track, track error or deviation from the desired course, ground speed, wind direction and velocity, distance and heading to destination, ETA, etc.

The manner in which the two types of systems obtain their basic motion data differs considerably. In the Doppler system, a transmitter sends radar waves earthward in fore-and-aft, left and right patterns. The waves are reflected by the ground back to a receiver in the airplane. Due to the phenomenon known as Doppler effect, in which the received waves change frequency depending on the relative motion of source and receiver, the wave returns at a different frequency than it was transmitted.

The difference in frequencies is called the *Doppler shift* and the shift is directly proportional to aircraft velocity. Thus, automatic comparison of outgoing/incoming wave frequencies of the fore-aft and left-right beams provides the basic data—measurements of velocity along track and



Left—constant position determination takes place by automatic computation, based on input from accelerometers which sense the movement of the aircraft in any direction following departure. Position may be indicated on the instrument panel by north/south, east/west coordinates, or by a simulated map readout. Diagram (above) shows the makeup of the north accelerometer, which supplies distance traveled as well as velocity change. Sensing is done on a "platform" (below) isolated from gravity by means of gyros and gimbals.



left-right of track. The computer takes over from there.

INS incorporates a gyroscopically stabilized platform with accelerometers that measure changes in velocity in three axes—fore-and-aft, side-to-side, and up-and-down. This platform is oriented with respect to stellar space. From integrations of acceleration measurements relative to this platform, the computer can deduce earth rotation rate and orientation of the aircraft from true north; velocities of the aircraft along each axis; and (by subsequent integrations) derive distances, present positions and predicted positions.

Integration of acceleration measurements are made with respect to time for which an accurate "clock" or time base is incorporated in the INS. The initial position of the aircraft in latitude and longitude coordinates must be manually inserted into the computer by the flight crew before takeoff.

The sensing pertinent to inertial navigation is all done by the accelerometers. The INS differs from gyro instruments in that the latter incorporates a pendulous device which responds to the accelerations due to gravity and causes a precessing of the gyroscope to maintain a "level" reference with respect to the earth's surface.

Although it is relatively new to commercial usage, inertial navigation traces its developmental history back to U.S. Navy experiments prior to World War II and to the German V-2 ballistic missile used in that war. The V-2 had a primitive inertial platform and a calculator that sent a shutdown signal to the rocket engine when the missile had traveled a certain distance from launch point.

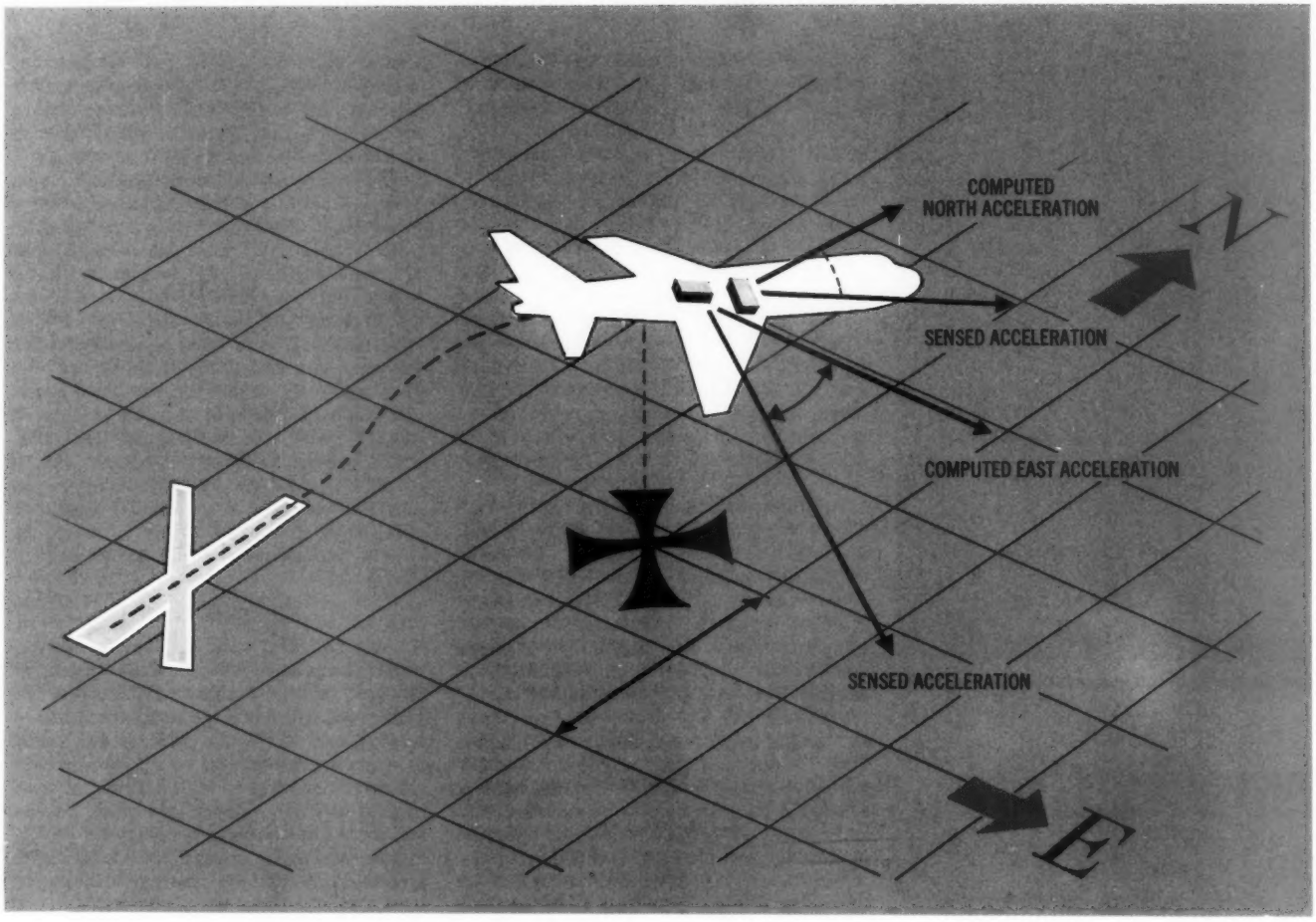
American development of the ICBM in the early fifties brought a need for a much more advanced, more accurate and more reliable inertial systems, which not only had to navigate but also to control the flight path of the missile. These first inertial systems were tremendously expensive, very large and heavy, but continuing advances in micro-electronics brought down both cost and size to the point where it became practicable to install inertial navigators in military aircraft. The first such application was in the Air Force B-58 supersonic bomber in 1960.

During the sixties, the airlines conducted several years of experimentation with inertial navigation systems before introducing them to regular service in the latter year of the decade. The first commercial airplane to come off the production line equipped with inertial navigators (it had three—two operating and one "cold" backup) was the Boeing 747, which went into airline operation in 1970. Today, inertial navigation is standard equipment on all new long-range jetliners and it is being retrofitted to more and more of the earlier jet transports, such as the 707 and the DC-8.

Development of inertial navigators continues and it appears that the system will enjoy even wider usage among military aircraft and civilian transport-types, as well as in high-performance, jet-powered general aviation airplanes. For the foreseeable future, it does not seem likely that usage will extend to the average lightplane. Inertial navigation, with its no-external-reference attraction, would make an excellent complement to a radio system were it not for the cost. Although cost has dropped a long way from the days of the first ICBMs, it is still very high—about $120,000 a unit in the B-747 installation, for example.

Continuing developmental effort will inevitably bring the cost down but an inertial navigator, with its computer and ultra-precise sensors and gyro-stabilized platform, is not a good prospect for low-cost manufacture. So, for at least the near-term future, employment of the inertial navigator will be confined to big airplanes. ■

Navigator on flight to North Pole checks accuracy of inertial navigation system with airborne radar in ground-mapping phase. System is free from electronic disturbances.



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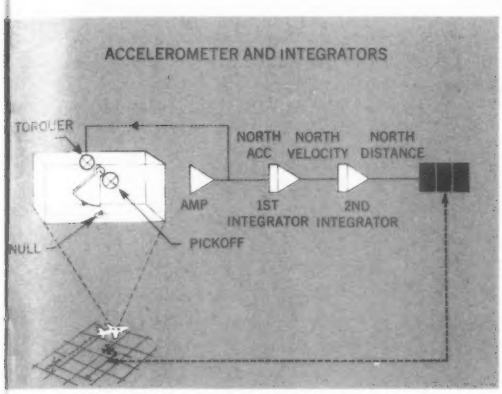

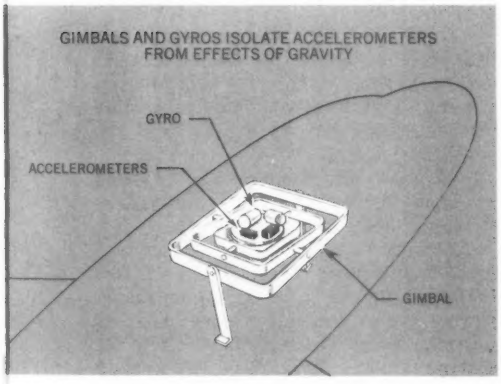

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Famous
FLYERS

Clarence Chamberlain

He Flew the First Passenger across the Atlantic in an Airplane.

Chamberlain introduced hundreds of thousands of persons (as many as 2,000 a day) to aviation during the decade he toured the country. Sightseeing trips were offered for a dollar a head.

Clarence Duncan Chamberlain was not the first man to fly the Atlantic but he was the first to carry a passenger across in an airplane. That celebrated passenger, the first of millions to follow, was a millionaire used car and junk trader, Charles A. Levine, who signed on as "navigator", although his navigation reference was the financial page of the *New York Times*. Chamberlain and Levine have long since faded from prominence, but in 1927 their record-setting flight from New York to the outskirts of Berlin created an interest in aviation exceeded only by the exploits of Lindbergh, who had blazed the trail across the Atlantic only two weeks earlier.

Prior to 1927 Chamberlain's career as a pilot had been undistinguished from that of hundreds of other adventuresome young men who could not stay on the ground. He was born in Denison, Iowa, in 1893, the son of a small town shopkeeper, and originally destined to be a watchmaker. As a youth he did, in fact, exhibit a natural aptitude for mechanics, leaving college after two years to open a tire repair shop. American entry into World War I gave him an opportunity to train and qualify as a military pilot, but the armistice was signed, much to his disappointment, before he could get overseas.

A barnstormer, racer and test pilot in the early Twenties, Chamberlain came to work for the Bellanca Aircraft Co. in 1925. Bellanca airplanes were noted for their endurance qualities, and on May 14, 1927, Chamberlain set a new world's circling endurance record (with Bert Acosta) of 51 hours, 11 minutes and 20 seconds, over Roosevelt Field, N.Y.

The airplane, a Wright-powered, 220 h.p. monoplane, led Chamberlain to a meeting with Levine, who owned it. Levine's original aspiration was to make the first Atlantic crossing in an airplane. He might well have succeeded in this hope, with Chamberlain (still eager to see Paris) at the controls, had not his financial adroitness led to an injunction being slapped on the Bellanca.

By the time the Bellanca—now designated the *Columbia*—had been released for flight, Lindbergh was already being pelted with flowers in Paris. Nothing daunted, entrepreneur Levine decided to become the first *passenger* flown across the ocean. To allay the fears of his wife, and possibly also his creditors, however, he said nothing of his actual intentions while the *Columbia* was being readied for the great effort—ostensibly a distance record flight from New York to Berlin, departing on or about May 30, 1927.

The aircraft carried nearly 400 gallons of gasoline in its tanks, plus about 55 gallons in containers in the cabin—enough for about 4,000 miles of flying. Weighing only 1,860 lbs. empty, the Bellanca had the extraordinary capability of taking off at twice that weight. Levine announced that a navigator would accompany the pilot, Chamberlain, but he refused to disclose who it would be. Newspapermen assumed he was being coy for publicity purposes. May dragged into June, and everyone waited for the weather and the confusion to clear.

By June 4, the weather was reported clear over the north Atlantic and Levine determined that this was the great day. The *Columbia* was fueled, provisioned and warmed up; a huge crowd gathered at the runway, and the newsreel cameramen cranked away. Suddenly Levine emerged from the crowd, carrying an armful of maps and a copy of the *Times*. He jumped into the airplane, which took off immediately. Levine's wife, who had not been given so much as a goodbye kiss, became almost hysterical.

Chamberlain's navigation problems were much simpler than those of his predecessors over the Atlantic, thanks to the ability of the Weather Bureau to obtain twice daily weather reports from all ships in the Atlantic (radioed in via the Radio Corporation of America). It was just as well for the *Columbia* that the weather held fair and required no detouring, since the "navigator" of that craft was a stranger at his task. In fact, he spent his time scanning the shipping columns of his paper, and soon put his knowledge to good use.

The next day they spotted the ship *Mauretania*, with its prominent four stacks, en route to New York. From the marine pages of the *Times* Levine knew that it had departed Southampton at noon the previous

day. The vessel's speed was common knowledge, so it was a simple matter for Chamberlain to estimate their position. He then took up a heading into the direction of *Mauretania's* wake and followed it to England.

Locating Berlin, on their final leg, was more of a problem. They actually overflew the German capital and landed in a wheat field near Eisleben about 110 miles southwest of their objective—out of gas and boneweary after traveling a record 3,905 miles in 42 hours and 31 minutes.

Their first words of "welcome" consisted of a tongue-lashing from the farmer's wife concerning the damaged wheat. The flyers were eventually rescued, transported to Berlin by the American Ambassador, and cheered by a crowd of 150,000 persons at Tempelhof Airport.

Back in the United States, Chamberlain continued his assault on records, and in 1932 set a new altitude mark of 19,363 feet in a Lockheed monoplane powered by a Packard Diesel. The engine reportedly consumed only $1.50 worth of "furnace oil" during the flight.

Chamberlain continued as an active pilot up to World War II, touring the country and taking up passengers for a dollar apiece. On busy days he carried as many as 2,000 passengers aloft in a single day. His enthusiasm for flying was contagious, and his personal contact with hundreds of thousands of newcomers to aviation probably did as much to bring about the age of flight as did his exciting feats, such as the flight to Berlin. Today, at a hale 79, Chamberlain divides his time between his home in Shelton, Conn. and Florida.

Incidentally, the whereabouts of his celebrated "first passenger to cross the Atlantic in an airplane", Charles A. Levine, are unknown today. He disappeared from the public eye as rapidly as he had emerged. ■

Chamberlain made his epic flight in a Bellanca. Plane's purchaser, Charles Levine, insisted on going along in the place of a navigator. They overshot Berlin by 110 miles, landed out of fuel in a German wheatfield.

Pilot BRIEFS

■ CORROSION CONTROL. Ag-plane operators are cautioned that many of the chemicals and fertilizers (both liquid and dry) being dispensed in aerial applications have highly corrosive effects on the parts and systems of the aircraft engaged in this activity. Extensive and costly damage can be avoided only by preventive maintenance practices. Agricultural aircraft should be kept as clean as possible, inspections should be scheduled regularly, and any evidence of corrosion should be completely removed before refinishing operations are performed.

■ SPECIAL AIR TRAFFIC RULE for high density traffic airports has been extended for another year, under Amendment #93-25, dated October 20. The rule requires an advance "reservation" for all aircraft operating in or out of Washington National and La Guardia from 6 am to midnight and at JFK and Newark Airports from 3 pm to 8 pm.

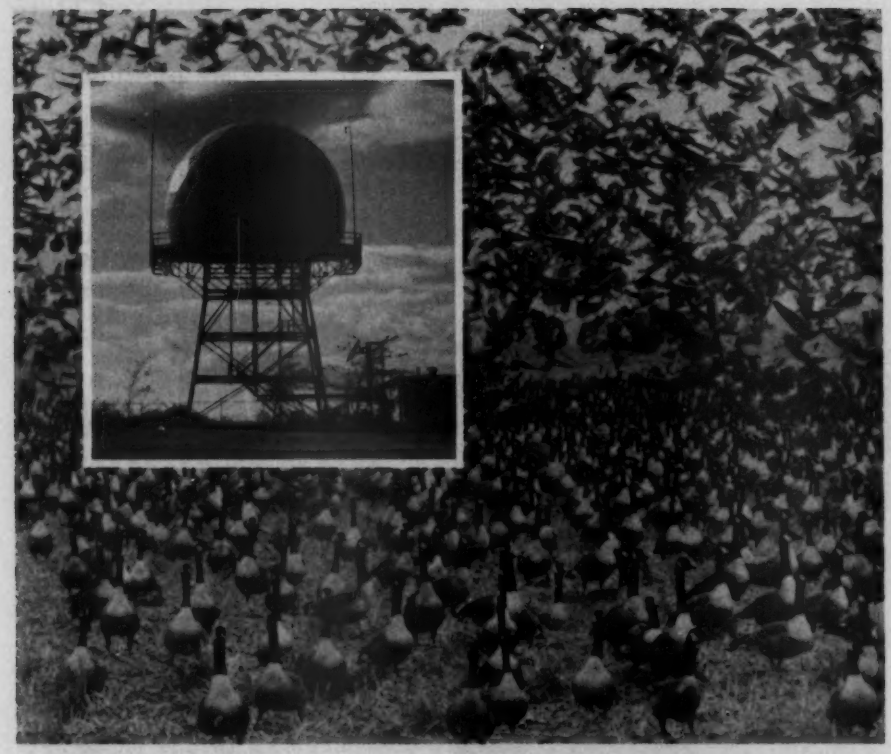
■ AVIATION MAINTENANCE AND ITS COMPLEXITIES is the theme of the Eighth Annual FAA International Aviation Maintenance Symposium to be held November 28, 29, and 30 at the Skirvin Hotel in Oklahoma City, Ok. New maintenance techniques and procedures will be spotlighted at the event which each year provides an opportunity for an open exchange of maintenance information between manufacturers, owners, operators, air carriers and others involved in aviation maintenance and related activities. Those wishing to attend may register at the door. Advance hotel room reservations are suggested.

■ JET BLAST EFFECT AND TREATMENT is the topic of a new FAA advisory circular on airport design standards. Included are discussions of jet blast velocities, metal and concrete deflector fences and blast erosion of off-pavement areas. AC 150/5325-6A is free from FAA TAD 484.3 Washington, D.C. 20591.

■ AIRPORTS MEAN BUSINESS is the title of a new FAA color movie now available for public showing. The film answers the oft-asked question, "Why do we need an airport?" Photographed at a dozen locations (including STOL and helicopter facilities) in seven states, the film points out to the community the many advantages of adequate airport facilities: new businesses, increased employment and a broader tax base; recreational possibilities; emergency services, etc.

The new film, which runs 28 minutes and is suitable for television use, replaces the film "Best Investment We Ever Made." Prints may be borrowed free by writing FAA Film Library, AC-44.5, Box 25082, Oklahoma City, Ok. 73125.

US ARMY AVIATION SCHOOL LIBRARY



GOOSE WATCHERS. Radar is being used in Wisconsin's celebrated Horicon Marsh to study geese migrations which each autumn create traffic jams on the roads for sightseers, hazards on the airways and irritation to farmers whose corn they feed on. Goose migration is apparently triggered by certain combinations of wind, air pressure, visibility and temperature. Knowing the combination could enable FAA to forecast geese movements like weather warnings. Geese, which appear on radar as "worm-like pips," are VFR flyers, become confused in fog.

Airframe Handbook Is Third in Series for Mechanics

Airframe and Powerplant Mechanics—Airframe Handbook has been published by FAA as the third and last of a series of books designed to be used by aircraft mechanics for review and upgrading, for on-the-job training and for study purposes for mechanic applicants. This comprehensive handbook includes basic information on airframe construction features, assembly and rigging, fabric covering, painting and finishing, structural repairs, welding, and airframe systems such as hydraulic, pneumatic, landing gear, electrical, instruments, communication and navigation.

The new publication and companion books may be purchased at Government bookstores, or ordered by mail from Superintendent of Documents, Government Printing Office, Washington, D.C. 20402. Send check, and specify publication name and catalog number:

Airframe and Powerplant Mechanics Airframe Handbook, AC 65-15, Catalog #TD4.408:Ai 7/5 Price $4 ($5 foreign): *Airframe and Powerplant Mechanics Powerplant Handbook*, AC 65-12, Catalog #TD4.408: Ai 7/3, $3.75 (4.70 foreign); *Airframe and Powerplant Mechanics General Handbook*, AC 65-9, Catalog #TD4.408:Ai 7/2, price $4 ($5 foreign).

Latest High Altitude RNAV Charts Have 143 Routes

Newly designed and produced FAA area navigation (RNAV) charts for high-altitude instrument flight depict 143 RNAV routes, an increase of 36 over the previous charts. The first RNAV charts, published in April 1971, contained only four.

The new charts are on a larger scale, with one inch equalling 23 nautical miles, as compared with the one inch to 38.4 of previous charts. There are now ten charts to cover the adjacent 48 states instead of the four in the old series.

The new chart series, which will be revised every 28 days, are available through fixed base operators, or from National Ocean Survey, Distribution Division C-44, Riverdale, Md. 20840. They are $6.75 per year for one chart or $26.00 per year for the complete set. A single sheet is 50 cents.

"Truth in Leasing" Rule Enacted

A new FAA regulation requiring a "truth in leasing" clause in certain leases and conditional sales contracts involving large aircraft (over 12,500 lbs.) will become effective January 3, 1973. The clause, spelling out in large print, the responsibilities of both parties regarding maintenance and operation, must precede the signatures of both parties. A copy of the contract must be sent to FAA and another carried in the aircraft. The new regulation is based on a notice of proposed rule making (#71-35) issued October 1971.

Pilots Like Aviation Weather Briefings on Local Television

General aviation pilots in the Washington, D.C./Baltimore area have been getting their weekend weather briefings in the comfort of their homes lately by way of public service television. Pilot viewers have responded so enthusiastically that sponsors of the project have hopes of seeing it supported nationwide.

The 15-minute telecast provides existing and forecast aviation weather for the weekend, followed by a pilot education segment covering various areas of accident prevention. Also included are news and announcements of special pilot interest, such as dates and places of pilot safety clinics. Project coordinator and host of the program is Victor Turner, a video tape engineer for Channel 67 in Baltimore as well as flight instructor and Accident Prevention Counselor.

The weather program is presently aired each Thursday and Friday evening at 7:15 and 11:15 on Channel 67 in Baltimore and on Channel 28 in Salisbury, Md.; at 11:30 p.m. in Washington, D.C. on Channel 26. The program is funded for a year, supported in part by a $5,000 grant from the Aircraft Owners and Pilots Association.

Roy Downs, FAA Accident Prevention Specialist at Baltimore GADO, left, and Victor R. Turner, program host, developed format.

• The Missing DC

It was a good story about Mr. Donald Douglas, the indestructible DC 3 and all the Douglas family. I would like to point out that you failed to mention the Douglas DC 5. I used to watch it on its test flights out of Mines Field (Los Angeles) back in late 1939.

Silvestre Dragoni
Ponce, Puerto Rico

The Missing DC-5

• Picking out the Pattern

I am a new private pilot and concerned with safety around airports. Although most traffic patterns are left hand and 800 feet above ground, there are a number of exceptions. I realize this information is available from flight service stations, Airman's Information Manual etc. but it isn't always easy for pilots to get it in advance as they should. Even some of the expensive airport diagram services do not tell pattern altitude and direction. Why doesn't FAA see that this information is put on airport charts?

Reg Thatcher
Glendale, Calif.

FAA is now developing revised regulations which would standardize traffic pattern altitudes and flight procedures at uncontrolled airports. We are also investigating the possibility of depicting traffic pattern altitude and right turn indicators on Sectional Aeronautical Charts. If the decision is made to proceed, the complete charting of this information would take about two years to accomplish.

• Designated Pilot Examiners

I would like some information on FAA pilot examiner designees. What are the requirements and what is the procedure for applying for a designee license? Is there a publication which outlines the requirements? What governs the number of designees allocated to a specific location? After appointment, what are the requirements for remaining current?

R. E. Gordon
Tulsa, Ok.

Designees are selected by an FAA General Aviation District Office when a need arises in that area for an additional examiner to give flight tests. The minimum qualifications are contained in FAA handbook 8420.5. The applicant for airplane pilot examiner must be 21 years of age and an active flight instructor of good reputation. He must have at least 2,000 pilot-in-command hours (300 in the past year), 500 hours of instructing time, and an instrument rating. An Instrument Rating Examiner also needs 250 hours of IFR instructing time. Requirements differ for other types of examiner, such as rotorcraft, glider, etc.

District offices attempt to designate enough inspectors so that no applicant must wait more than five days or travel more than 50 miles for a flight test. The number is limited, however, to those that each GADO can effectively supervise.

Pilot examiner designation is valid for one year, and may be renewed by passing a check on flight test standards, maneuvers and procedures; however, it may be terminated at any time the district office is not satisfied with his performance, or his services are not "profitable" in terms of the number of tests given compared with the inspector time necessary for the supervision of his activities.

• Man of Few Words

At Van Nuys we have an extremely busy tower, and we try hard to reduce frequency congestion. Wherever possible we keep our phraseology to a minimum and encourage others to do the same. Will you please ask pilots to use as few words as possible at busy airports? For example, all a pilot needs to say to ground control to get a taxi clearance is, *"Sparrow 577 Xray, clearance from hangar three."*

You will note that he has fulfilled the initial callup requirements of letting us know who he is, where he is, and what he wants to do, in only seven words.

It is not necessary for him to say he is on the ramp (that is obvious), that he is ready to taxi (he wouldn't call otherwise), that he is VFR (we know he is unless he advises to the contrary), what his destination is or which direction he is headed (usually he gets the same runway regardless). The shorter the phraseology the better, as far as we are concerned.

Howard N. Peterson
Chief, Van Nuys Tower

• Powerless Approaches

Your article on soaring, "Free and Easy," in the June 1972 issue was generally good but did contain two significant points with which I disagree.

The sailplane accident rate is admittedly high, and many accidents are caused by bad procedures such as the one you mention, and thus implicitly endorse: entering the landing pattern obliquely on the downwind leg. This can produce a "no-way-out" critical situation as the sailplane can't do a go-round.

The sensible pilot will fly over the field with plenty of height to spare (1,500 to 2,000 feet AGL) before starting his downward leg. He will observe the windsock for wind direction and strength (wind changes can be frequent in soaring conditions), check that the landing strip is clear, and look out for other traffic.

Secondly, doubling the stalling speed on approach is too high, except perhaps in very strong winds. Normally 1.3 to 1.5 times stall is correct (depending upon conditions) for most sailplanes. Excessive aproach speed results in long float and could be hazardous on a small field or off-airport landing.

John L. T. Williams, C.F.I.
Long Beach, Calif.

Our article referred to sailplane trainers, normally used where runway length is no problem. Approach speed must always be geared to existing conditions and pilots will always want to look at a field from altitude before committing themselves to a landing.

Sailplanes have spoilers for spilling off excessive speed, but no means (at low altitude) of compensating for insufficient velocity.

FAA Aviation News welcomes comments from the aviation community. We will reserve this page for an exchange of views. No anonymous letters will be used, but names will be withheld on request.

• Altimeter Setting

Back in the days when I first learned about altimeter errors, I was taught to set the altimeter to field elevation and note the difference between the Kollsman number on my altimeter and the one given to me by ground control, so I could make the same correction to subsequent altimeter settings, to compensate for altimeter mechanical errors.

I believe the Air Force still does it that way. Does FAA concur that this is the correct procedure? If not, would you please explain what the current correct procedure is, and why.

J. G. Peterson
Alta Loma, Calif.

There are two FAA-approved procedures for compensating for altimeter errors. One is as you described. The other is to set the altimeter to the setting given by ground control or ATIS, and to compare the indicated altitude with the actual field elevation. Thereafter you set your altimeter at the given setting and apply your correction to the indiciated altitude when reading the altimeter. NOTE: In either case, since elevations may vary around a given airport, the setting must be accomplished in a position of known field elevation.

• The Buffalo was a Stallion

I am sure it has been pointed out to you by others, but the captions of STOL aircraft, page 11, July issue are mixed up—the *Stallion* was identified as the *Buffalo* and vice versa.

You publish an informative little magazine. Keep it up.

Matthew L. Howard, M.D.
Ukiah, Calif.

Right you are, Doctor. The aircraft are correctly identified below.

Helio Stallion

De Havilland Buffalo

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